Small electronic parts management system

ECE 445
Final Presentation
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Overview

• Introduction & Objectives
• Key Features
• Design, Requirements and Verifications of Each modules
• Future Applications and Improvements
• Acknowledgement
• Questions
Introduction

- How we come up with this idea
- How it works

Drawers in Senior Design Lab
Objectives

• Opened drawer recognition.

• LCD user interface.

• Keypad input.

• Wireless data transfer.

• Items counter.

• Online database.
Key Features

• Easy operation
• LCD display
• MySQL database inventory
• Wireless data transfer

A sample Keypad
Design, Requirements and Verifications
Main Block Diagram

- Power Supply (5V DC)
- Drawer Switch Signal
- Keypad
- LCD Screen
- Wireless data transmission
- Micro Controller Unit
Power Supply
Power Supply

120V AC to 5V DC 2A converter

Intersection between PCB and converter
Power Supply

Schematic of 5V to 3.3V regulator
Micro Controller Unit
No drawer open, please open one to start!
Layer 1 for PCB
Layer 2 for PCB
PCB
PCB Introduction

- LCD regulation resistor ports. Since the LCD board we use has its own regulation resistance, we took off the resistor from these ports.
- LCD Signal Pin Ports
- MUX
- PIC16F887
- Reset Button
- XBEE Module
- User Input Keypad
- 5V Power Supply
- XBEE LED
A little modification for Keypad

After we place the LCD board on our PCB, we found that some parts of our User input buttons are blocked by the LCD, so we add a new keypad board beside PCB.
A little modification for Keypad
Schematic for switch and MUX

DRAWER MUX
Connecting drawer signal to PCB
Drawer switches

We place tape here to disconnect the copper and wires when we close the drawer.

2 Wires are connecting by the copper when the drawer is open.
Schematic for PIC
Flowchart for PIC working process

1. Start
2. MCU Initialization
3. LCD Initialization
4. XBEE Setup
5. Drawer Open
   - N: Go back to Step 5
   - Y: Process Result and Display
   - Y: Correct Input from Keypad
     - Y: Calculate the enter value, Process the Input Data, and Transmit
     - N: Go back to Step 5
Schematic for LCD
Display for LCD

No drawer open, please open one to start!

DRAWER #7 open, enter the check in/out number. (*:in,:out):___
Display for LCD

- 25 item has been check in, please close the drawer.
- Please open one drawer each time.
Wireless Data Transmission
Wireless Data Transmission

- **XBee Receiver**
  - USB
  - **Computer Terminal**
    - Write Java Commands to read
    - **MySQL database**
    - **web server**
      - **Users**
      - **Users**
      - **Users**

- **Java Command Parse Data strings**
Wireless Data Transmission

X-CTU is downloaded from www.digi.com
if ( commPort instanceof SerialPort )
{
    //read from serial port
    SerialPort serialPort = (SerialPort) commPort;

    serialPort.setSerialPortParams(9620, SerialPort.DATABITS_8, SerialPort.STOPBITS_1, SerialPort.PARITY_NONE);

    InputStream in = serialPort.getInputStream();
Sample Code

//Send queries to mySQL

try{
    Connection conn = DriverManager.getConnection("jdbc:mysql://ardenview.com:3306/ardencfg_SD","ardencfg_real","1q2w3e");

    //Update the amount
    currentAmount += amount;

    //Upload the amount to the database
    sql = "Update drawer set amount= ? where id= ? ";
    PreparedStatement preparedStmt = conn.prepareStatement(sql);
    preparedStmt.setInt (1, currentAmount);
    preparedStmt.setInt  (2, drawerNum);
    preparedStmt.executeUpdate();
    conn.close();
}
### MySQL Inventory

<table>
<thead>
<tr>
<th>Options</th>
<th>Drawer ID</th>
<th>Items</th>
<th>Amount</th>
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Bugs and Improvements

Output after fetching the data by Eclipse(Java)
Future Applications

Self-Serviced Library

Pharmacy Store
Acknowledgement

• Professor Carney
• Justine Fortier
• ECE 445 staff
• Friends from ECE Parts Shop and Machine Shop
Thank you!!!

Questions?